

R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

THE SPECIFICATION

The specification has been amended at page 4 to avoid referring to the claims, as well as to make some minor grammatical improvements. Clearly, no new matter has been added, and it is respectfully requested that the amendments to the specification be approved and entered.

THE CLAIMS

The election of process claims 1-5 is hereby affirmed.

Claim 1 has been amended to recite the features of the method of the present invention whereby glass parts for connecting optical fibers are manufactured by placing a glass tube having an internal hole into a frame, and heating predetermined parts of the glass tube from outside the frame while applying pressure into the internal hole of the glass tube so as to expand the predetermined parts, thus forming tapered portions. And as recited in amended claim 1, the frame restricts an increase in an outside diameter of the glass tube. These amendments are supported by the disclosure in the specification at page 15, line 25 to page 16, line 15, and by the disclosure in Figs. 15A and 15B.

In addition, claims 2 and 5-8 have been canceled, and some minor clarifying amendments have been made to claims 3 and 4.

Still further, new claim 9 has been added to recite the subject matter of original claim 6 in the form of a method depending from amended claim 1, and new claim 10 has been added to recite how the glass tube utilized in the method of the present invention is formed, as supported by the disclosure in the specification at page 10, lines 2-14 and page 11, lines 27-32.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered.

THE PRIOR ART REJECTIONS

Claims 1-4 were rejected under 35 USC 102 as being anticipated by USP 4,822,389 ("Berkey"), and claim 5 was rejected under 35 USC 103 as being obvious in view of the combination of Berkey and USP 4,372,773 ("Halasz"). These rejections, however, are respectfully traversed with respect to amended claims 1, 3 and 4 as well as with respect to new claims 9-10.

As recognized by the Examiner, Berkey discloses a method of heating predetermined parts of a glass tube having an internal hole while applying pressure into said internal hole, to expand said predetermined parts, thus forming tapered portions.

It is respectfully submitted, however, that Berkey fails to disclose, teach or suggest the features of the present invention as recited in amended claim 1 whereby a glass tube having an internal hole is placed into a frame and heated from outside the frame while applying pressure into the internal hole of the glass tube so as to expand the predetermined parts and form tapered

portions, in a manner such that the frame restricts an increase in an outside diameter of the glass tube. That is, according to the method of the claimed present invention, a special effect can be provided such that tapers (26a) can be formed without the outside diameter of the drawn glass tube (25) increasing at the expanded portion (25a), as described in the specification at page 25, line 35 to page 26, line 2.

The Examiner has cited Halasz as disclosing a support 42 used during shaping of a glass tubing to produce a desired outside diameter of the shaped tubing.

It is respectfully submitted, however, that Halasz relates to an entirely different field of endeavor (i.e., the making of capillary glass liners for use in ink jet writing devices), and that there would have been no reasonable motivation for one of ordinary skill in the art of manufacturing glass parts for connecting optical fibers to apply the teachings of Halasz to Berkey to achieve the method of the present invention as recited in amended claim 1.

Still further, it is respectfully submitted that even if the teachings of Berkey and Halasz were combinable in the manner suggested by the Examiner, the method of the present invention as recited in amended claim 1 would still not be achieved. In this connection, it is respectfully pointed out that according to the present invention as recited in amended claim 1, the heating of the predetermined parts of the glass tube is carried out from outside the frame while applying pressure into the internal hole of the

glass tube so that the frame restricts an increase in an outside diameter of the glass tube. By contrast, as clearly shown in Fig. 4 of Halasz, the heating of the glass tubing 70 is carried out at a position where the support 42 is not provided - i.e., in Halasz, the heating of the glass tubing is not carried out from outside the frame as according to the claimed present invention.

In view of the foregoing, it is respectfully submitted that the present invention as recited in amended claim 1, as well as each of amended claims 3 and 4 and new claims 9-10 depending therefrom, patentably distinguishes over the teachings of Berkey and Halasz, taken singly or in combination, under 35 USC 102 as well as under 35 USC 103.

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Entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,



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are carried out while the glass tube is placed in a frame. In this way, tapers can be formed with no increase in the outside diameter of each obtained glass part at its tapered portion(s).

5 In another preferred embodiment of the present invention, the heating of the glass tube and the application of pressure into the internal hole are carried out while drawing the glass tube in a longitudinal axial direction thereof. In this way, the
10 outside diameter of each obtained glass part can be reduced at its tapered portion(s).

The method of manufacturing glass parts for connecting optical fibers according to the present invention further comprises cutting each of the
15 predetermined parts of the glass tube to obtain an open end in which one of the tapered portions is formed, after the heating of the glass tube and the application of pressure into the internal hole.

To attain the above object, the present invention
20 further provides a glass part for connecting optical fibers manufactured ^{as described above,} ~~using the method claimed in any one of claims 1 through 3,~~ wherein at least one of open ends of the glass part is tapered in such a manner that ~~there~~
~~is~~ a continuous curved surface ^{is formed} at the boundary between
25 the at least one of the open ends and the internal hole ^{of the glass part}.

With the glass part according to the present invention, the boundary between each tapered portion and the internal hole is a continuous curved surface. As a result, optical fibers can be inserted into the internal
30 hole smoothly.

The above and other objects, features and advantages of the invention will become more apparent from the following detailed description taken in conjunction with the accompanying drawings.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claims 1, 3 and 4 have been amended as follows:

1. (Amended) A method of manufacturing glass parts for connecting optical fibers, comprising:

placing a glass tube having an internal hole into a frame; and

heating predetermined parts of [a] the glass tube [having an internal hole] from outside the frame while applying pressure into said internal hole of the glass tube so as [,] to expand said predetermined parts, thus forming tapered portions;

wherein the frame restricts an increase in an outside diameter of the glass tube.

3. (Amended) A method of manufacturing glass parts for connecting optical fibers as claimed in claim 1, wherein the heating of said glass tube and the application of pressure into said internal hole of the glass tube are carried out while drawing
5 said glass tube in a longitudinal axial direction thereof.

4. (Amended) A method of [manufacuring] manufacturing glass parts for connecting optical fibers as claimed in claim 1, further comprising cutting each of the predetermined parts of said glass tube to obtain an open end in which one of said tapered portions is
5 formed, after the heating of said glass tube and the application of pressure into said internal hole of the glass tube.